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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,465	09/30/2003	Sergei Kolomeitsev	VAL 169P2	5545
34232	7590	05/07/2007		
MATTHEW R. JENKINS, ESQ. 2310 FAR HILLS BUILDING DAYTON, OH 45419			EXAMINER NGUYEN, HANH N	
			ART UNIT	PAPER NUMBER
			2834	
			MAIL DATE	DELIVERY MODE
			05/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/675,465

Applicant(s)

KOLOMEITSEV ET AL.

Examiner

Nguyen N. Hanh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Amendments filed on 2/12/2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-9, 11-17, 27-29 and 35-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 38 and 39 is/are allowed.
- 6) ☒ Claim(s) 2-9, 11-17, 27-29, 35-37 and 40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 2-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kashima (JP403078458A).

Regarding claim 2, Kashima discloses an electric motor, comprising: a pair of stator teeth (1a and 1b in Fig. 2), having a stator slot therebetween, said stator slot having slot opening (viewed from the center of the stator 1) which faces a rotor in the motor, which rotor rotates about an axis; and means for increasing magnetic flux passing through the slot opening, wherein the means comprises a body which is located radially outward of the slot opening (as shown in Fig. 1, a protrusion of tooth 1a extended radially to cover the slot opening) and located farther from said axis than the slot opening, and reducing cogging torque (abstract).

Regarding claim 3, Kashima also discloses an electric motor wherein the means (a protrusion of tooth 1a as shown in Fig. 2) is magnetically and physically continuous with one of the stator teeth.

Regarding claim 5, Kashima also discloses an electric motor comprising: a pair of stator teeth (1a and 1b in Fig. 2), having a stator slot therebetween, the stator slot having a radial slot opening, and a body (a protrusion of tooth 1a as shown in Fig. 2) located radially outward of the slot opening, which increases magnetic flux passing through the slot opening and reduce cogging torque (abstract).

Regarding claims 4 and 40, Kashima also discloses an electric motor wherein two coils are present, one around each stator tooth (Fig. 1).

Regarding claim 6, Kashima also discloses an electric motor wherein the body (a protrusion of tooth 1a as shown in Fig. 2) is magnetically continuous with one of the teeth.

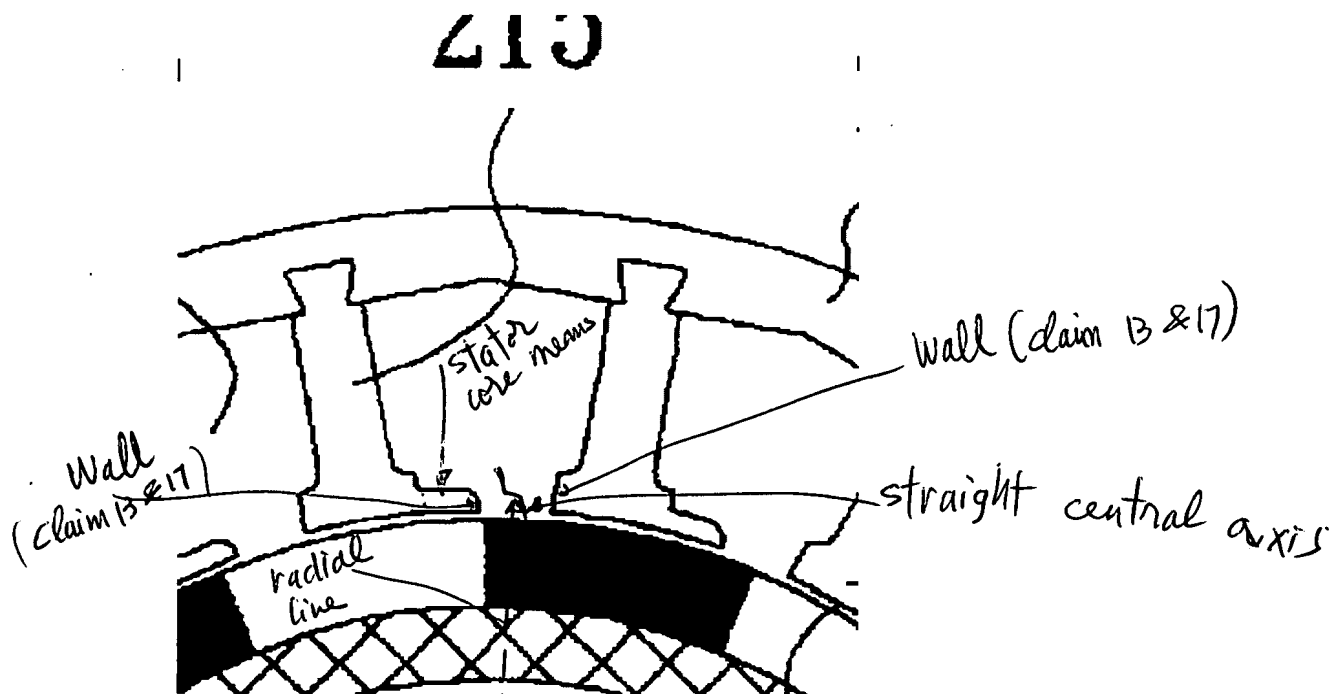
Regarding claim 7, Kashima also discloses an electric motor wherein the body (a protrusion of tooth 1a as shown in Fig. 2) is physically continuous with one of the teeth (Fig. 4).

Regarding claim 8, Artus et al. also disclose an electric motor wherein the body (52) is both physically and magnetically continuous with one of the teeth (Fig. 3).

Regarding claim 9, Artus et al. also disclose an electric motor wherein the body reduces cogging torque of the motor when no current is applied to the motor.

3. Claims 11-17, 28, 29 and 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Hsu.

Regarding claim 11, Hsu also discloses in an electric motor having a rotor, the improvements comprising: stator coils (inherent), and stator core means (the portion end of the tooth holder which is reserved) for decreasing mid-phase reluctance of the rotor (because when the rotor pole is at mid-slot position, the protrusion at the end of a stator tooth collect the flux leakage at the slot opening) wherein the stator core means comprises a slot having a straight central axis, and said central axis is non-radial (please see markups).



Regarding claim 12, Hsu also discloses the improvement wherein said central axis has a radially inner region which crosses a radial line of the rotor, and a radially outer region which is spaced circumferentially from said radial line (please see markups).

Regarding claim 13, Hsu also discloses in an electric motor having a rotor, the improvements comprising: stator teeth (215 in Fig. 2A), and a non-radial slot opening

separating neighboring stator teeth, which slot opening has two walls extending along its length, which walls comprise flat surfaces on said teeth.

Regarding claim 14, Hsu also discloses the improvement wherein the non-radial slot opening decreases mid-phase reluctance of the rotor, compared with a radial slot opening (compare to the stator core without the portion end which is reserved).

Regarding claim 15, Hsu also discloses the improvement wherein the non-radial slot opening decreases cogging torque, compared with a radial slot opening (compare to the stator core without the portion end which is reserved).

Regarding claim 16, Hsu also discloses the improvement comprises a central axis, and said central axis has a radially inner region which crosses a radial line of the rotor, and a radially outer region which is spaced circumferentially from said radial line.

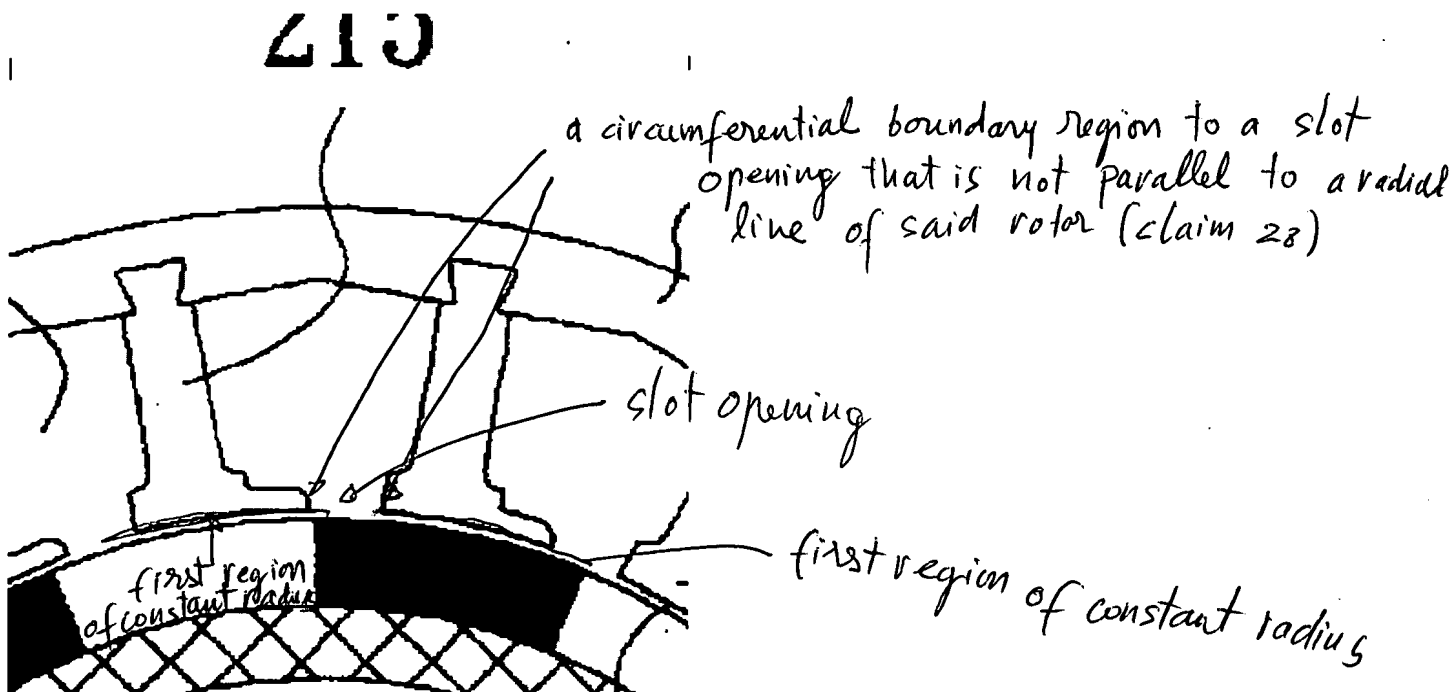
Regarding claim 17, Hsu also discloses an electric motor, comprising: a rotor (31 in Fig. 2A); an array of stator teeth (215) surrounding the rotor, each stator tooth separated from its neighbor by a non-radial slot opening, which slot opening has two walls extending along its length, one wall formed by a facet of one tooth; and another wall formed by a surface of an adjacent tooth (please see markups).

Regarding claim 28, Hsu also discloses an electric motor, comprising: a rotor, a first stator tooth (215 in Fig. 2A) having a radially inner face which includes a first region of constant radius, and a circumferential boundary region to a slot opening that is not parallel to a radial line of said rotor, wherein the slot opening separates the stator tooth from an adjacent stator tooth which adjacent stator tooth includes: a first region of

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constant radius and a circumferential boundary region to a slot opening that is not parallel to a radial line of said stator (please see markups).

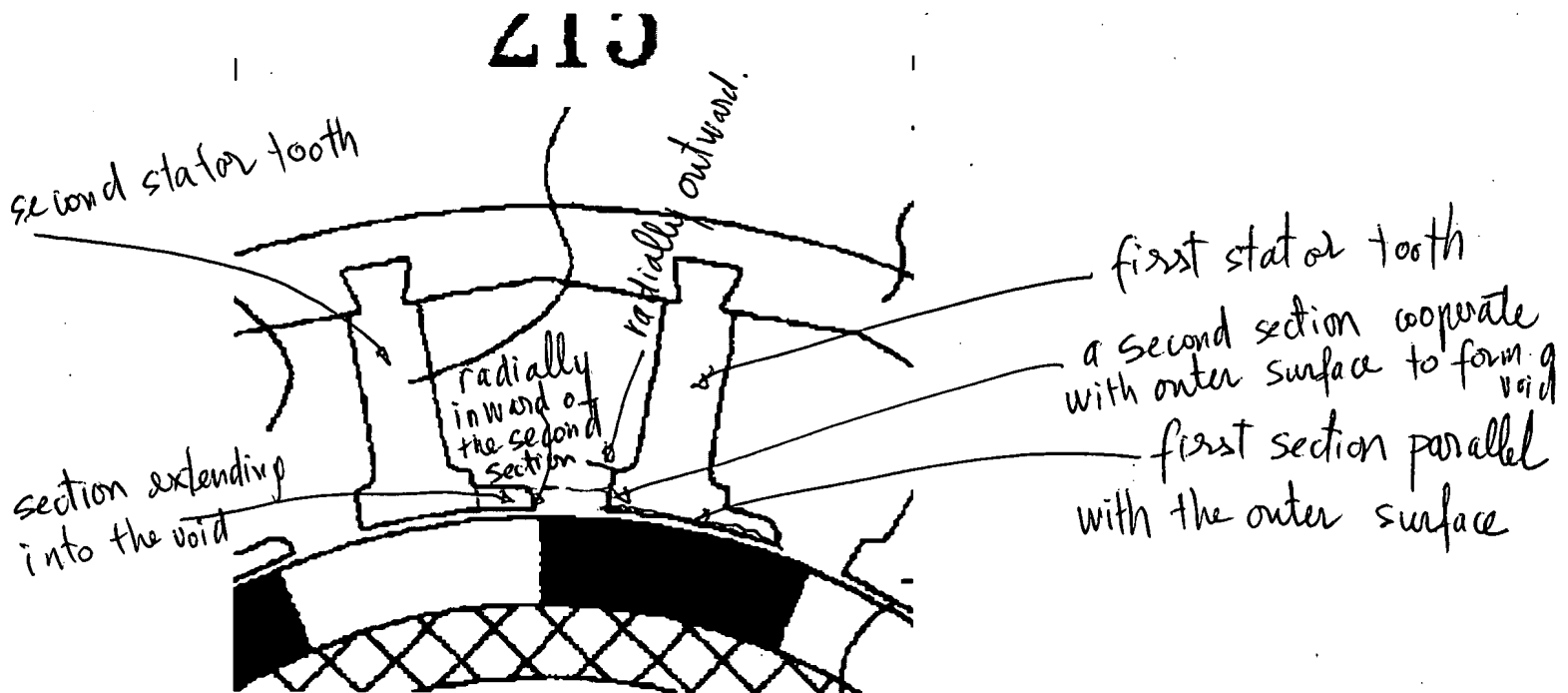
Regarding claim 29, Hsu also discloses an electric motor wherein the circumferential boundary region does not lie in the same plane as the first region.



Regarding claim 35, Hsu also discloses an electric motor comprising: a) a rotor having a generally circumferential outer surface; b) a first stator tooth, having a radially inner surface which includes i) a first section which is generally parallel with the outer surface, and ii) a second section which A) is non-parallel with said outer surface and B) cooperates with said outer surface to form a void; c) a second stator tooth having a section which extends into the void (please see markups); and is radially inward of said second section; and d) two substantially identical coils, one around the first tooth and one around the second tooth.

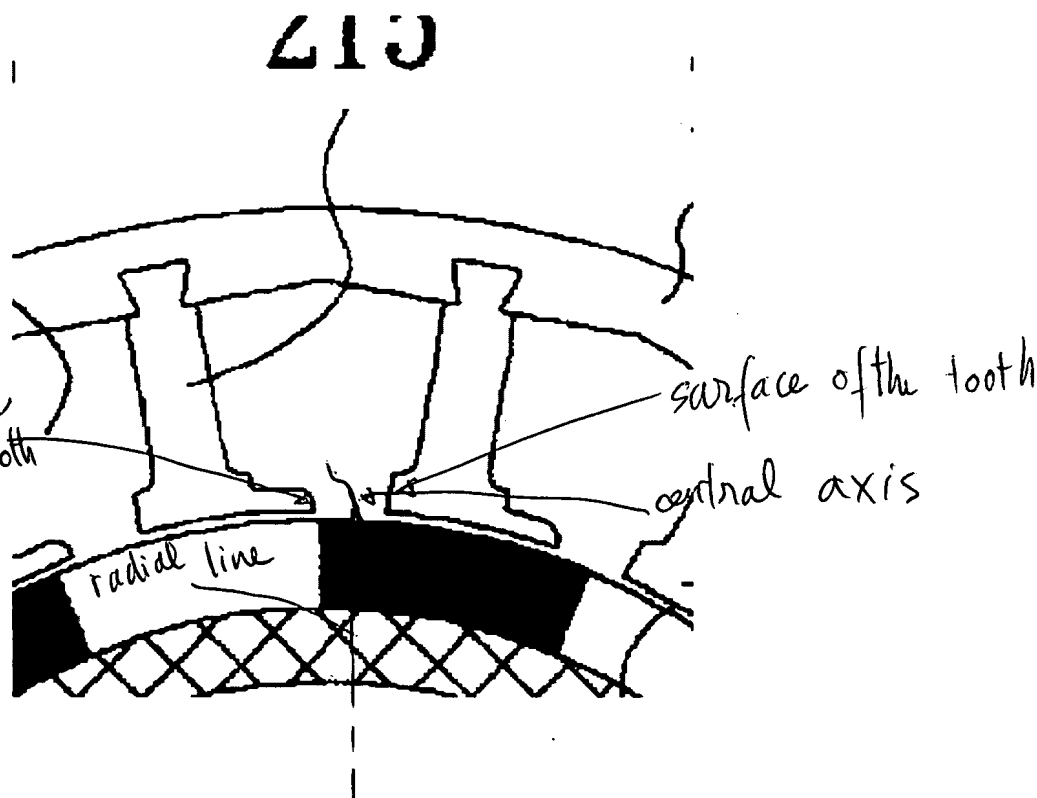
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Regarding claim 36, Hsu also discloses an electric motor comprising: a) a radial array of stator teeth, each surrounded by a coil, all coils being substantially identical; b) a slot between each pair of neighboring teeth, which slot i) is bordered by one surface on each tooth; and ii) has a central axis, midway between the surfaces, which is non-radial (please see markups).



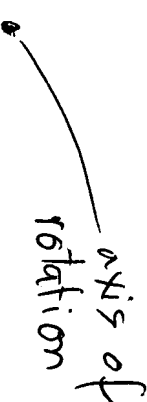
Regarding claim 37, Hsu also discloses an electric motor wherein the slot is generally V-shaped.





4. Claim 27 is rejected under 35 U.S.C. 102(e) as being anticipated by Maslov et al (US 6,822,368).

Regarding claim 27, Maslov et al. discloses an electric motor, comprising: a first stator tooth surrounded by a first coil; a second stator tooth surrounded by a second coil, substantially identical to the first coil; an elongated space separating the first and second stator teeth and having a radially innermost slot opening and a central axis which is non-radial; a body (please see markups) which is magnetically continuous with the first stator tooth, and has a radially inner surface which is radially outside said innermost slot opening.



## Response to Arguments

5. Applicant's arguments filed on 2/12/2007 with respect to claims 11-17, 27-29 and 35-37 have been considered but but they are not persuasive.

Regarding claim 11, the applicant's argument is on the ground that the reference the Examiner relies on, Hsu, fails to show "a straight central axis and means for decreasing mid-phase reluctance of a motor" and the means of Hsu is opposite to the recitation. The Examiner respectfully disagrees with the Applicant because the central axis comprises three component, two are straight axis and one is radial axis and the claim requires the slot having "a straight axis". Moreover, Hsu clearly shows the means is "a protrusion" in the stator tooth. The Examiner agrees with the Applicant's argument that "a small reluctance" equivalent to "large magnetic field" and placing an iron body in the slot will decrease reluctance. Hsu shows in Fig. 3A a radial protrusion from the tooth and the protrusion collects the flux leakage at the slot opening and the protrusion

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help the magnetic to flow easily therefore decrease "reluctance" and it is not opposite to the claim.

Regarding claim 12, Hsu clearly shows a central axis comprises a straight section besides a radial section.

Regarding claims 13-15 and 17, Hsu clearly shows the slot opening is non-radial because the portion of the stator teeth at the opening having different slope.

Regarding claim 16, please refer to the discussion of claim 12.

Regarding claim 28, Hsu clearly shows two regions of constant radius and two circumferential boundary regions in two adjacent stator teeth and the boundary regions are not parallel to a "radial line".

Regarding claim 35, it is noted that each and every limitation of the claimed invention has been fulfilled by Hsu as shown in the markups.

Regarding claim 36, Hsu clearly shows a "slot" having a central axis which is "non radial" because it is comprised of three components and it is not a radial line.

Regarding claim 27, the elements 31 of Fig. 3 having the same configuration as Fig. 5 and all limitations of the claimed inventions as recited by claim 27 have been fulfilled by Maslov et al.

In short, the claims are interpreted as reasonable broad as possible and they still do not clearly and distinctly claim the subject matter of the invention. Therefore, the rejection is still deemed proper

***Allowable Subject Matter***

6. Claims 38 and 39 are allowed.

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7. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not show an electric motor as described in claim 38 comprising at an end of each tooth nearest the rotor: i) an extension A which extends counterclockwise and ii) an extension B which extends clockwise; wherein each extension A on a tooth partly overlaps extension B on its neighboring tooth.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of

***Information on How to Contact USPTO***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh N Nguyen whose telephone number is (571) 272-2031. The examiner can normally be reached on Monday through Friday.

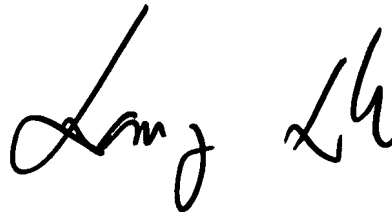
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg, can be reached on (571) 272-2044. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and (571) 273-8300 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

HNN

April 29, 2007

A handwritten signature in black ink, appearing to read 'Dangle' followed by a stylized mark.

DANGLE  
PRIMARY EXAMINER